REMARKS

Claims 1-4, 6-11, 13-25 and 27-29 are currently pending in the subject application and are presently under consideration. Claims 1, 11, 14, 22 and 29 have been amended as shown on pp. 2-6 of the Reply. Claims 6, 13 and 27 have been canceled.

Favorable reconsideration of the subject patent application is respectfully requested in view of the comments and amendments herein.

I. Rejection of Claims 1-4, 6-11, 13-25 and 27-29 Under 35 U.S.C. §102(e)

Claims 1-4, 6-11, 13-25 and 27-29 stand rejected under 35 U.S.C. §102(e) as being anticipated by Cabral *et al.* (US Patent 6,697,062). It is respectfully requested that this rejection should be withdrawn for at least the following reasons. Cabral *et al.* does not teach or suggest each and every element as set forth in the subject claims.

> A single prior art reference anticipates a patent claim only if it expressly or inherently describes each and every limitation set forth in the patent claim. *Trintec Industries, Inc. v. Top-U.S.A. Corp.*, 295 F.3d 1292, 63 USPQ2d 1597 (Fed. Cir. 2002); *See Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the … claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

The claimed invention relates to systems and methods for quickly and accurately rendering textured, lit spheres. Independent claims 1, 11, 22 and 29 recite similar limitations, namely: a system/method for rendering an image of an object having a curved surface, comprising: *a determiner that determines M number of attributes relating to rendering the image,...; a first processor that pre-computes N number of attributes relating to rendering the image, N being an integer less than or equal to M, and* ***the N number of attributes being pre-computable and stored in at least one lookup table****,...; and a second processor that computes the M number of attributes,* ***the second processor employs the pre-computed N number of attributes from the at least one lookup table to compute the M number of attributes***. Cabral *et al.* does not expressly or inherently disclose the aforementioned novel aspects of applicant's invention as recited in the subject claims.

Cabral *et al.* discloses a method, system and computer program product for reflection space image based rendering of an object at an interactive frame rate. Cabral *et al.* includes the application of image-based rendering (IBR) techniques in reflection space and the use of a hybrid rendering algorithm. The system utilizes reflection space IBR applied to radiance environment maps. A radiance environment map pre-integrates a Bidirectional Reflection Distribution Function (BRDF) with a lighting environment. Using the reflection-space IBR algorithm on radiance environment maps allows interactive rendering of arbitrary objects with a large class of complex BRDF's in arbitrary lighting environments. (*See* Col. 5, lines 12-42)

In contrast, applicant's claimed invention discloses a system for rendering textured, lit spheres. The system includes a determining component that determines which of M attributes relating to rendering an image may be employed in rendering the image. For example, the M attributes include, ambient lighting, diffuse lighting, specular lighting, colors, textures, bump maps, viewing positions, sphere sizes and sphere locations. The system also includes a pre-computing component for pre-computing N attributes relating to rendering an image. N attributes include, one or more of an ambient lighting component, a diffuse lighting component, a specular lighting component, a pole vector, an equator vector and a vector characterizing where the pole vector crosses the equator vector.

Further, the N attributes may be stored, in one or more lookup tables where the N attributes are available for use by a computing component in computing the M attributes. Since a pixel in the rendered object may be positionable in a three-dimensional space *via* x,y,z coordinates, the N attributes may be collected into one or more lookup tables. Storing such pre-computable attributes in lookup tables may mitigate problems in conventional rendering systems by reducing the total number of calculations employed in rendering an image of an object. The pre-computed N attributes are employed by the computing component to compute the M attributes. Conventionally, computing the M attributes typically involved repeated computations of values, which in the present invention have been pre-computed and stored in the N pre-computed attributes. One or more of the M attributes may be computed using one or more values from the x, y and z lookup tables. Conventionally, a diffuse lighting component calculation may have included one or more floating-point calculations and may not have included lookups of previously calculated integer values. Thus, the present invention increases the speed with which renderings may be achieved. (*See* pg. 5, line 8-pg. 7, line 9).

Cabral *et al.* merely discloses rendering an object at an interactive frame rate. First, destination viewing vector coordinates are computed, defining the destination viewing vector of the current frame in three-dimensional space. Then, a subset of the set of source viewing vectors is determined. The determination includes finding a number of source viewing vectors in the set of N source viewing vectors which are nearest to the computed destination viewing vector, such that the subset of source viewing vectors corresponds to a subset of the previously-loaded source radiance environment sphere maps. (*See* col. 6, lines 25-42). Cabral *et al.* does not disclose a pre-computing component for pre-computing N attributes relating to rendering an image, wherein the N attributes include, one or more of an ambient lighting component, a diffuse lighting component, a specular lighting component, a pole vector, an equator vector and a vector characterizing where the pole vector crosses the equator vector. The N attributes are stored, in one or more lookup tables wherein the N attributes are used by a computing component in computing the M attributes. Accordingly, Cabral *et al.* is silent with regard to a system for rendering a sphere, comprising: *...; a first processor that pre-computes N number of attributes relating to rendering the image, N being an integer less than or equal to M, and* ***the N number of attributes being pre-computable and stored in at least one lookup table****,...; and a second processor that computes the M number of attributes,* ***the second processor employs the pre-computed N number of attributes from the at least one lookup table to compute the M number of attributes***.

In view of at least the above, it is readily apparent that Cabral *et al.* fails to expressly or inherently disclose applicant's claimed invention as recited in independent claims 1, 11, 22 and 29 (and claims 2-4, 6-10, 13-21, 23-25 and 27-28 which depend there from). Accordingly, it is respectfully requested that these claims be deemed allowable.

CONCLUSION

The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063 [MSFTP158US].

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicant's undersigned representative at the telephone number below.

Respectfully submitted,

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